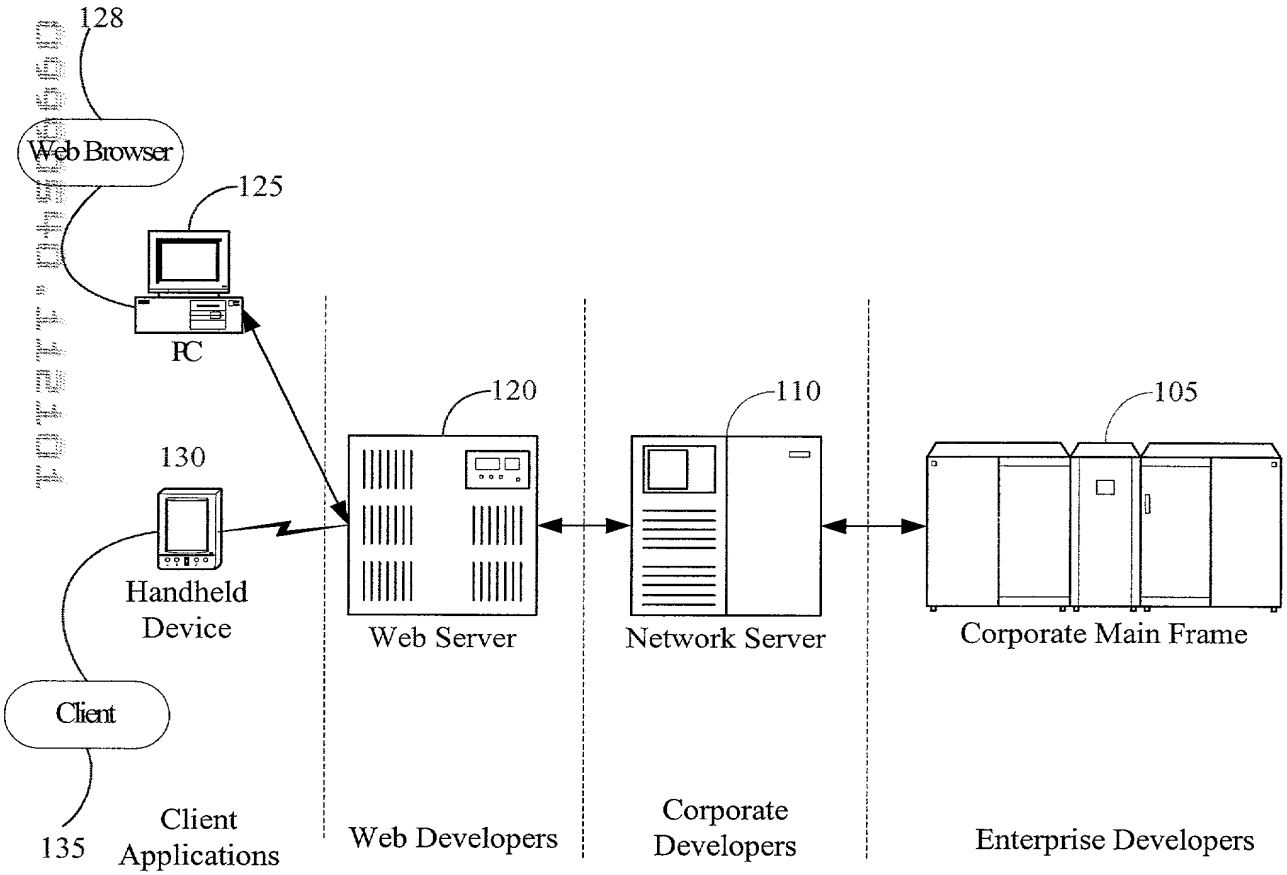
128
Web Browser
125
PC
130
Handheld Device
Client
135
Client Applications
120
Web Server
Web Developers
110
Network Server
Corporate Developers
105
Corporate Main Frame
Enterprise Developers

FIGURE 1

Patent Application Publication

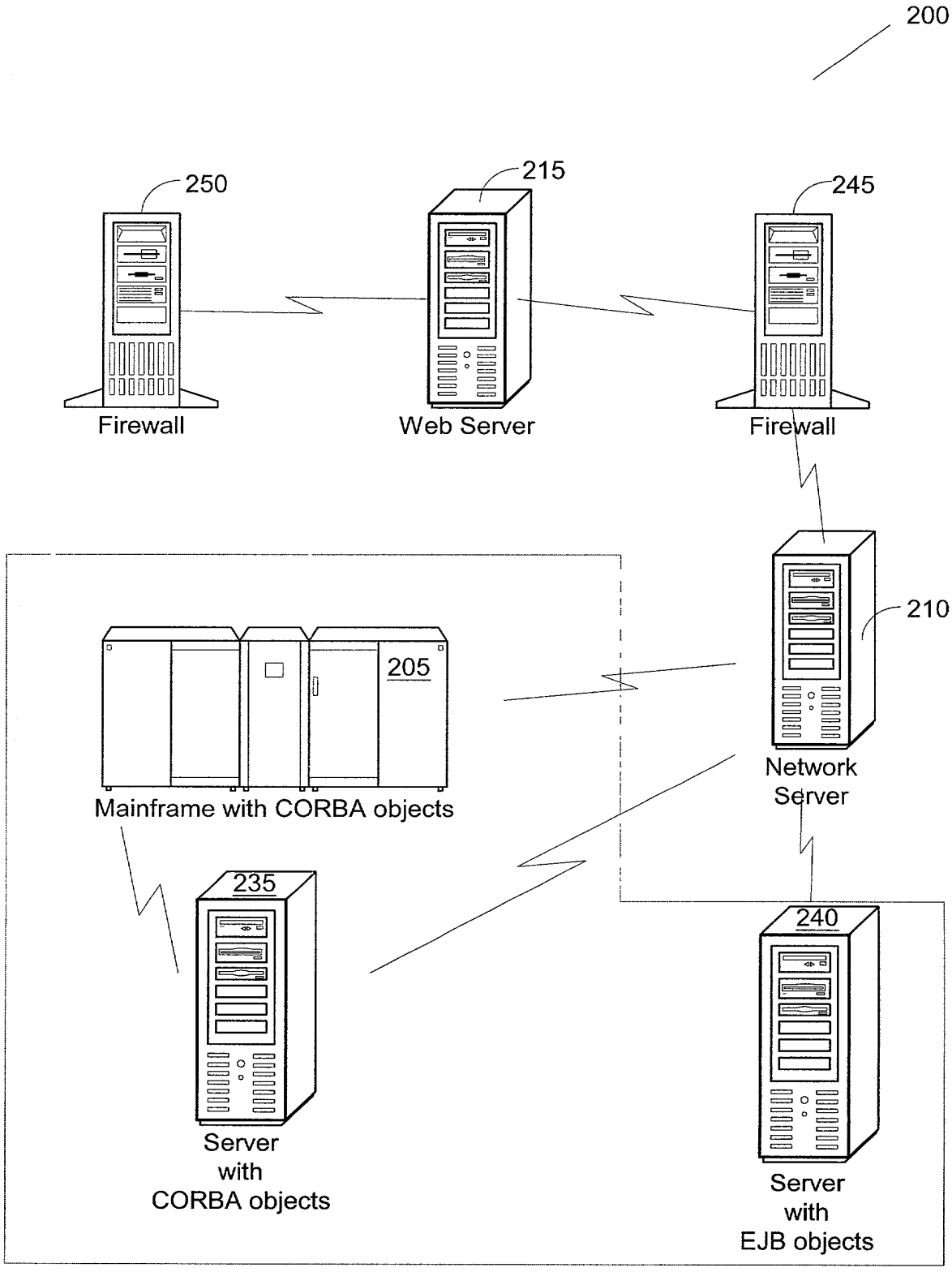

FIGURE 2

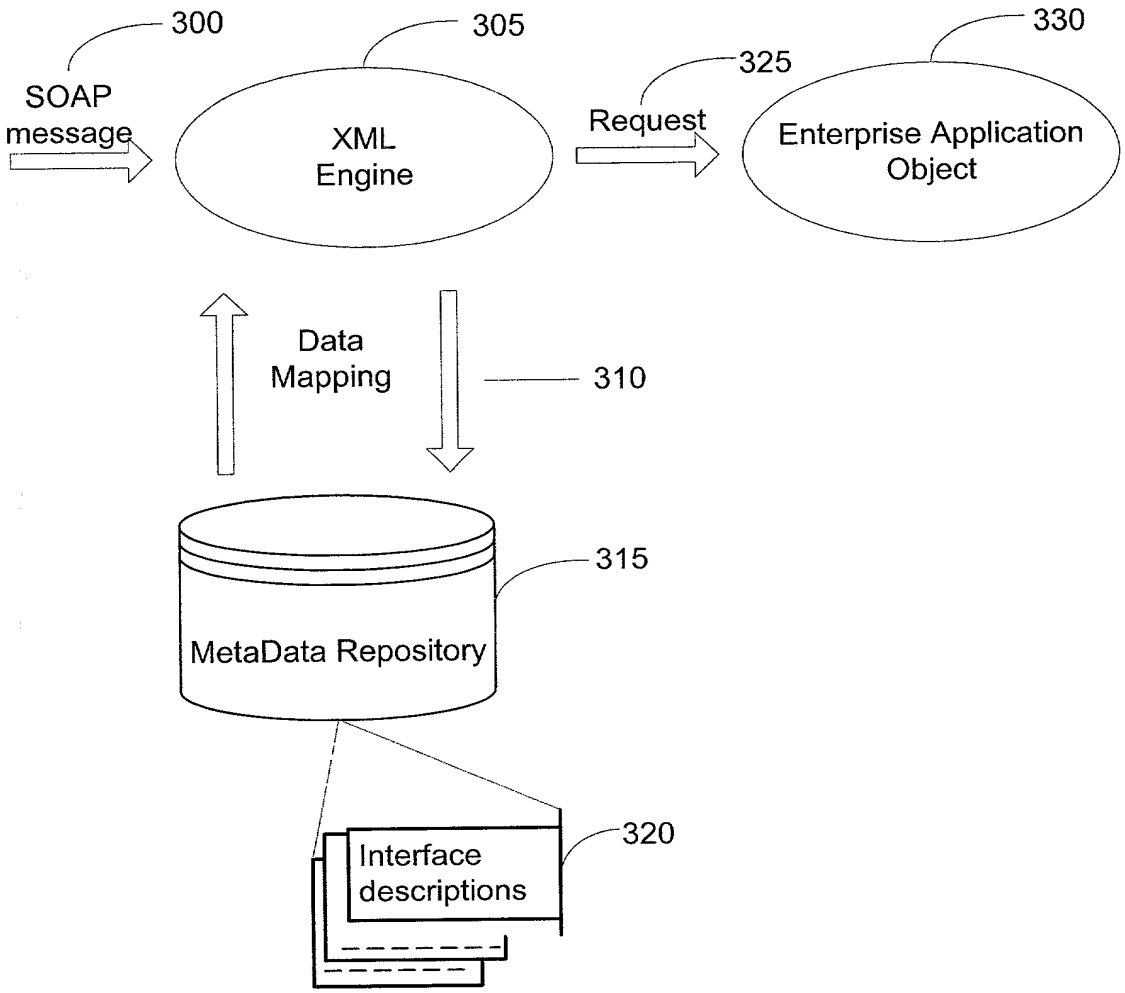
300
305
330
325
SOAP
message
XML
Engine
Request
Enterprise Application
Object
Data
Mapping
310
315
MetaData Repository
320
Interface
descriptions

FIGURE 3

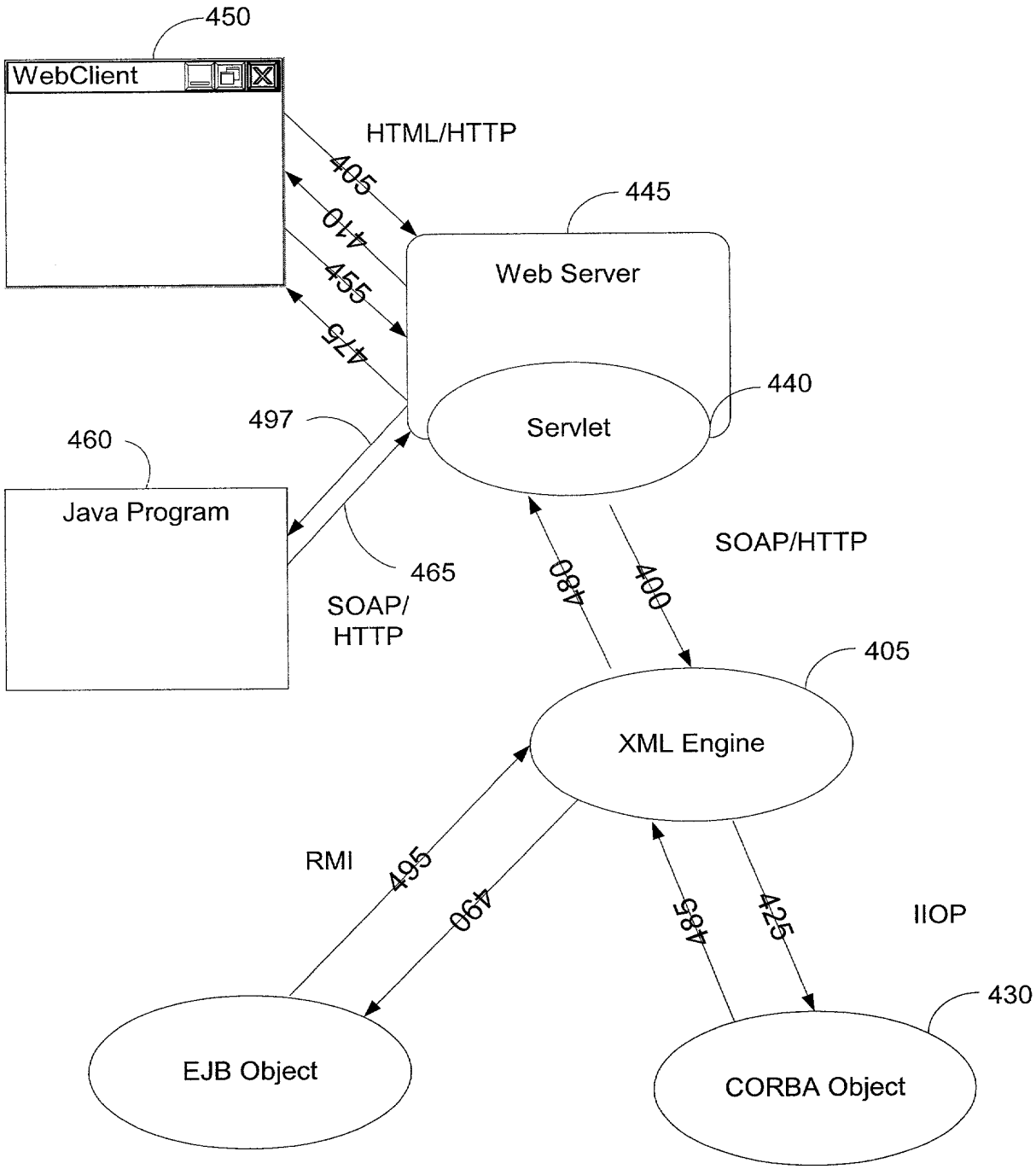
450
WebClient
HTML/HTTP
405
410
455
475
445
Web Server
440
Servlet
497
460
Java Program
465
SOAP/
HTTP
480
400
SOAP/HTTP
405
XML Engine
RMI
495
490
585
425
IIOP
430
EJB Object
CORBA Object

FIGURE 4

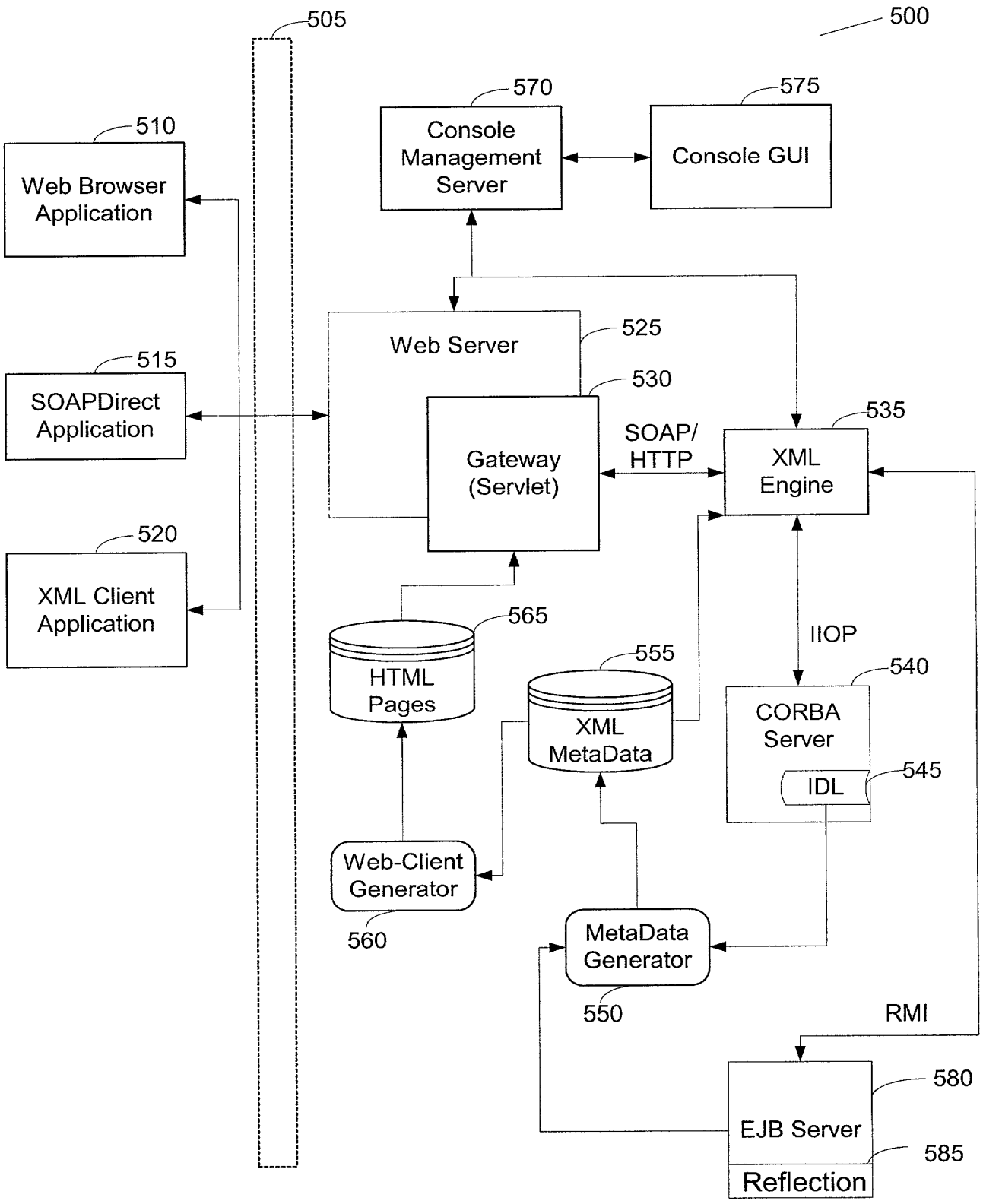
505
500
570
575
510
Console Management Server
Console GUI
Web Browser Application
Web Server
525
530
515
SOAPDirect Application
Gateway (Servlet)
SOAP/ HTTP
535
XML Engine
520
XML Client Application
565
HTML Pages
555
XML MetaData
IIOP
540
CORBA Server
545
IDL
Web-Client Generator
560
MetaData Generator
550
RMI
580
EJB Server
585
Reflection

FIGURE 5

09505440 - 112101

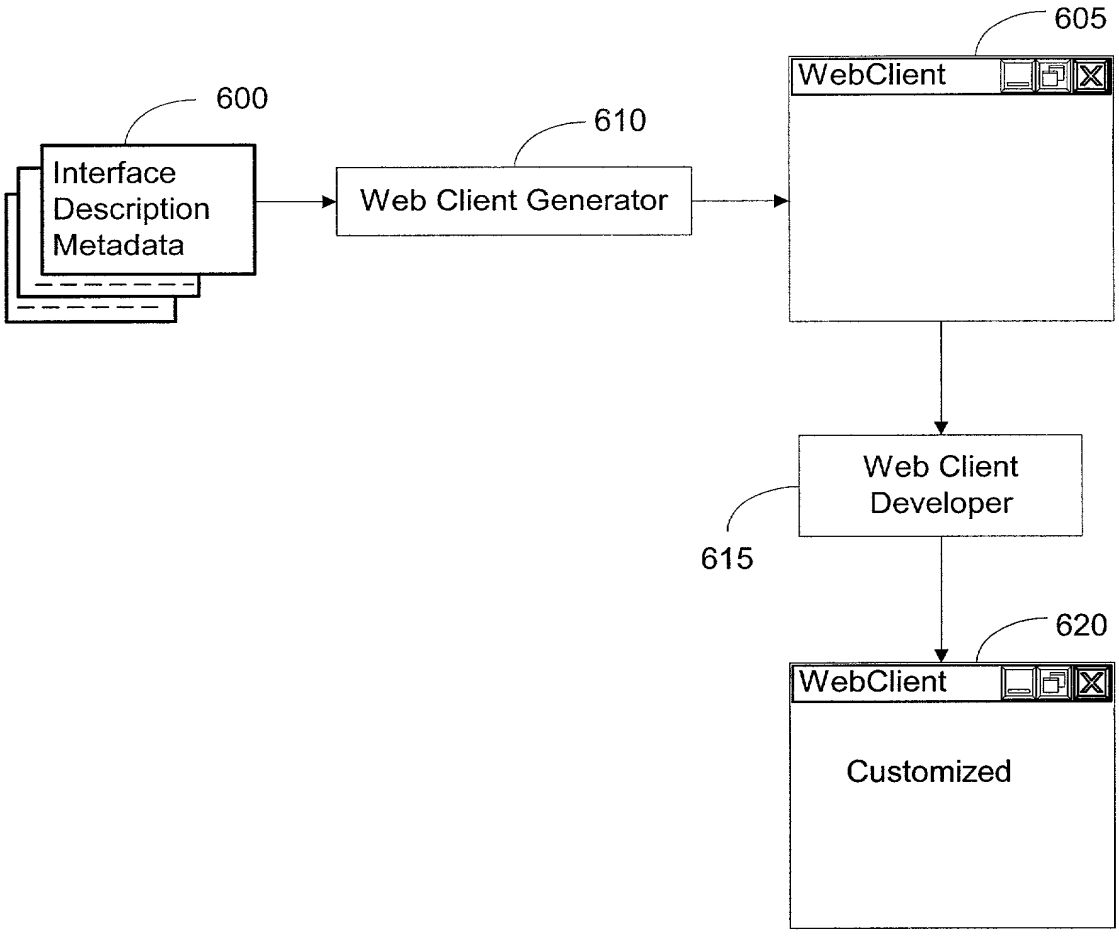

FIGURE 6

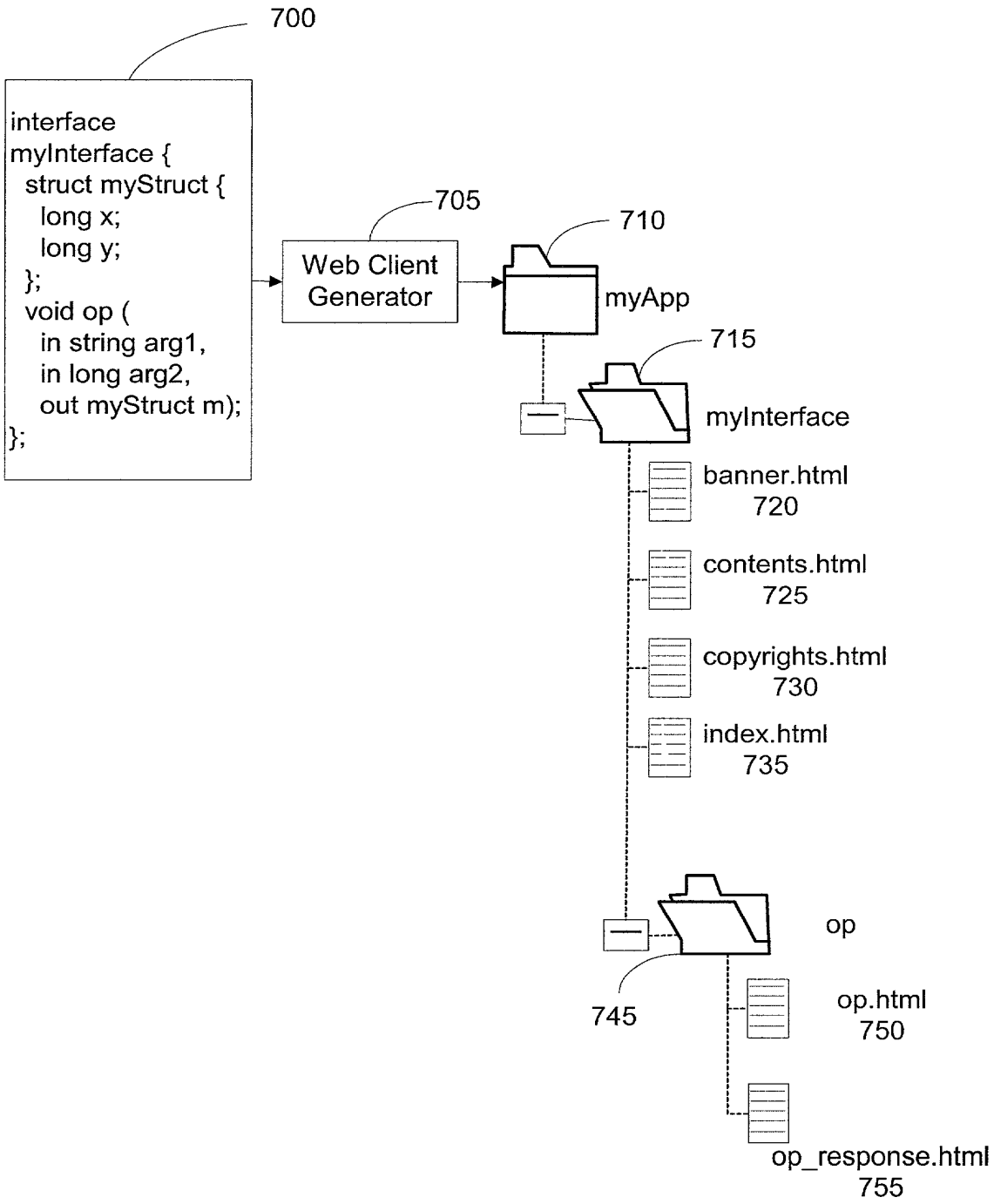
700
interface
myInterface {
struct myStruct {
long x;
long y;
};
void op (
in string arg1,
in long arg2,
out myStruct m);
};
705
Web Client Generator
710
myApp
715
myInterface
banner.html
720
contents.html
725
copyrights.html
730
index.html
735
op
745
op.html
750
op_response.html
755

FIGURE 7

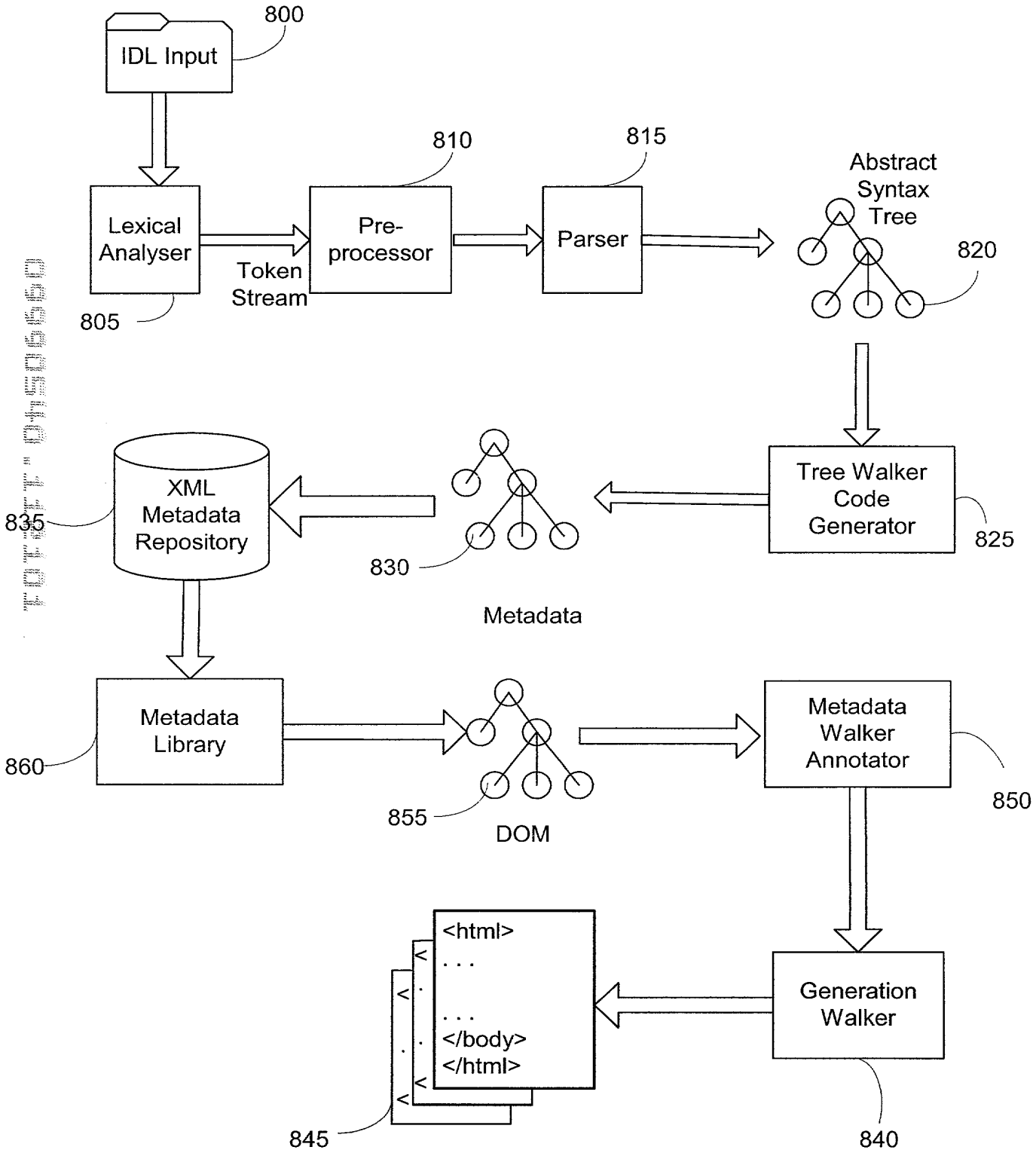
800
IDL Input
Lexical Analyser
805
Token Stream
810
Pre-processor
815
Parser
Abstract Syntax Tree
820
Tree Walker Code Generator
825
830
Metadata
XML Metadata Repository
835
Metadata Library
860
855
DOM
Metadata Walker Annotator
850
Generation Walker
840
<html>
. . .
. . .
</body>
</html>
845

FIGURE 8

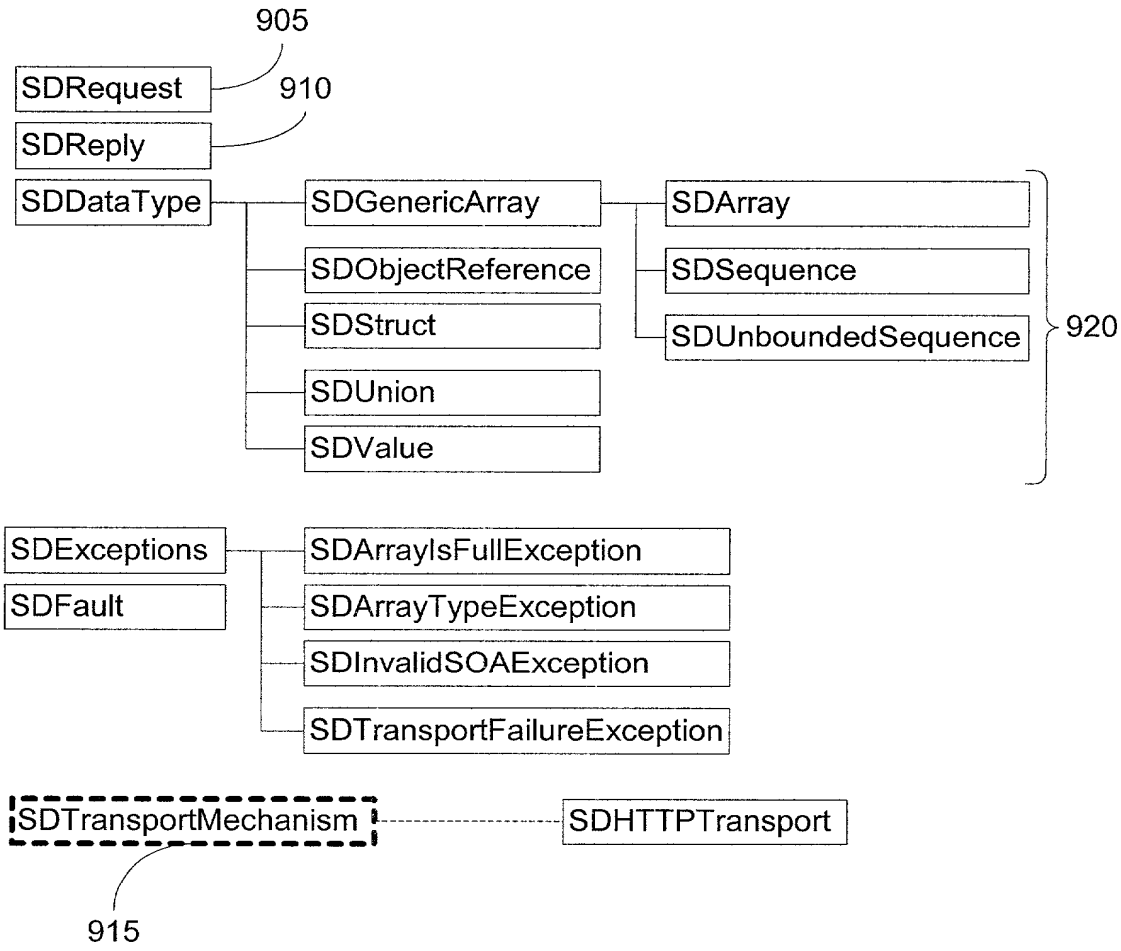
905
SDRequest
910
SDReply
SDDataType
SDGenericArray
SDArray
SDObjectReference
SDSequence
SDStruct
SDUnboundedSequence
920
SDUnion
SDValue
SDExceptions
SDArrayIsFullException
SDFault
SDArrayTypeException
SDInvalidSOAException
SDTransportFailureException
SDTransportMechanism
SDHTTPTransport
915

FIGURE 9

Patent Application

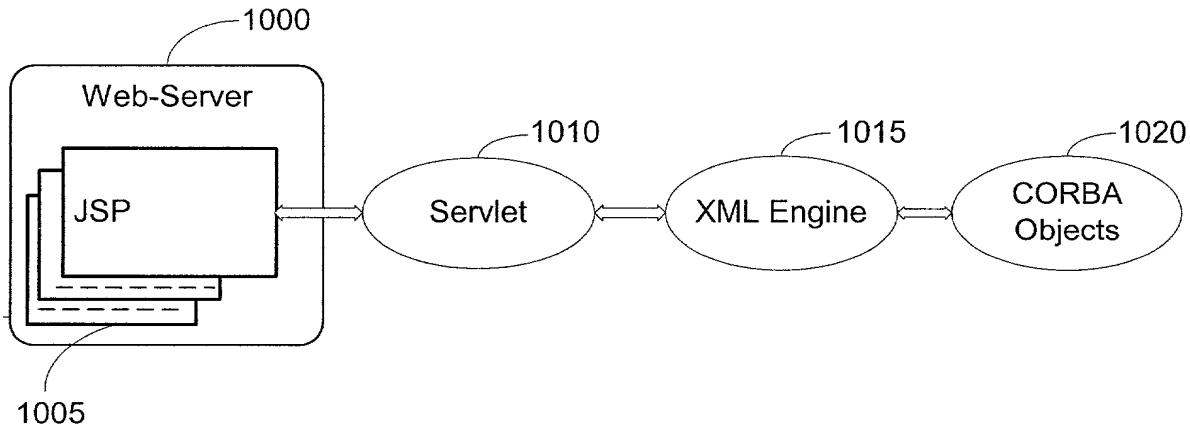

FIGURE 10

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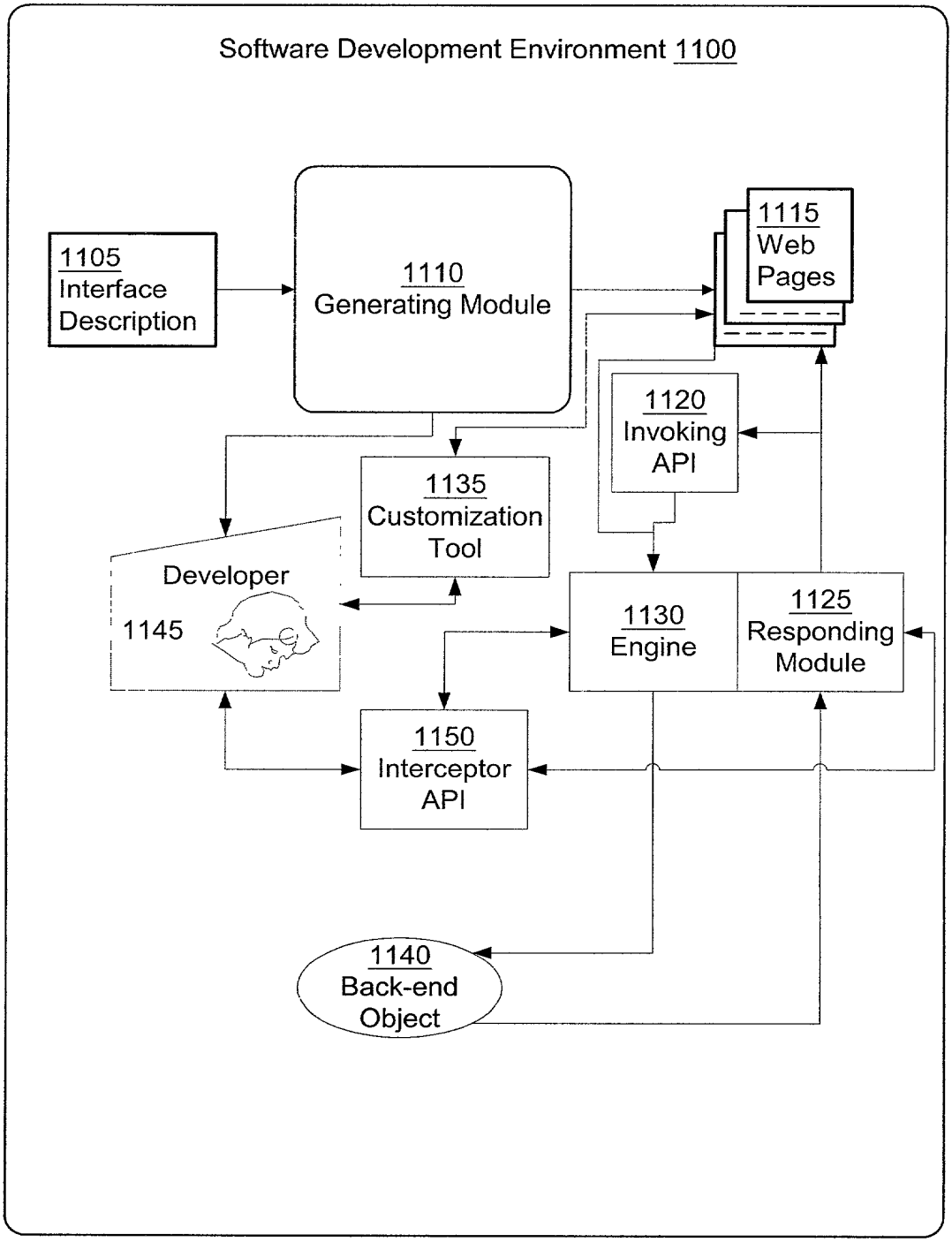

FIGURE 11

Patent Application Publication

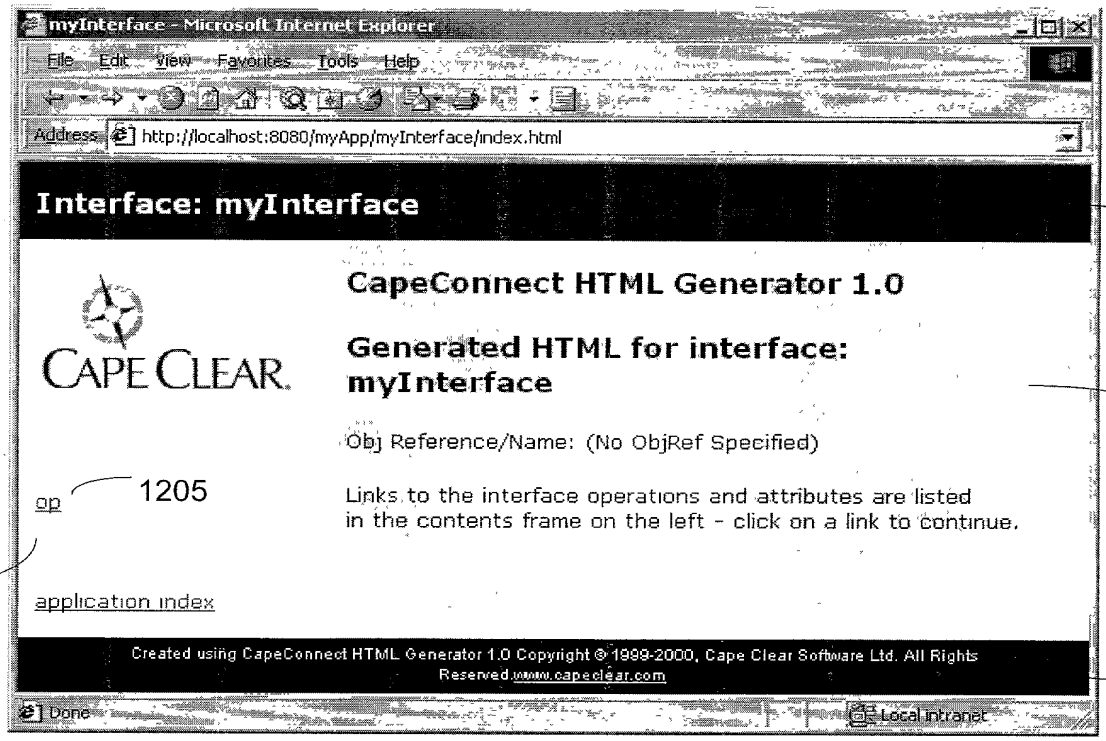

Figure 12

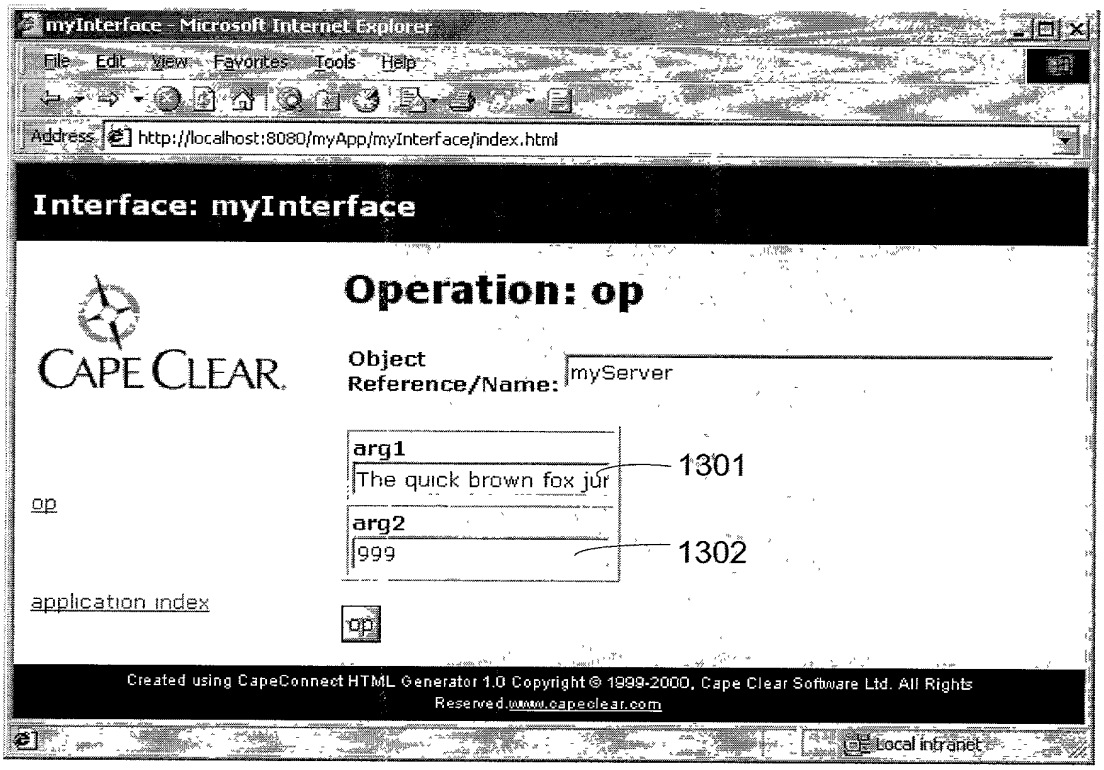
myInterface - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://localhost:8080/myApp/myInterface/index.html
Interface: myInterface
CAPE CLEAR
Operation: op
Object Reference/Name:
myServer
arg1
The quick brown fox jur
1301
arg2
999
1302
op
application index
op
Created using CapeConnect HTML Generator 1.0 Copyright © 1999-2000, Cape Clear Software Ltd. All Rights Reserved.www.capeclear.com
Local intranet

Figure 13

Portal Exhibit

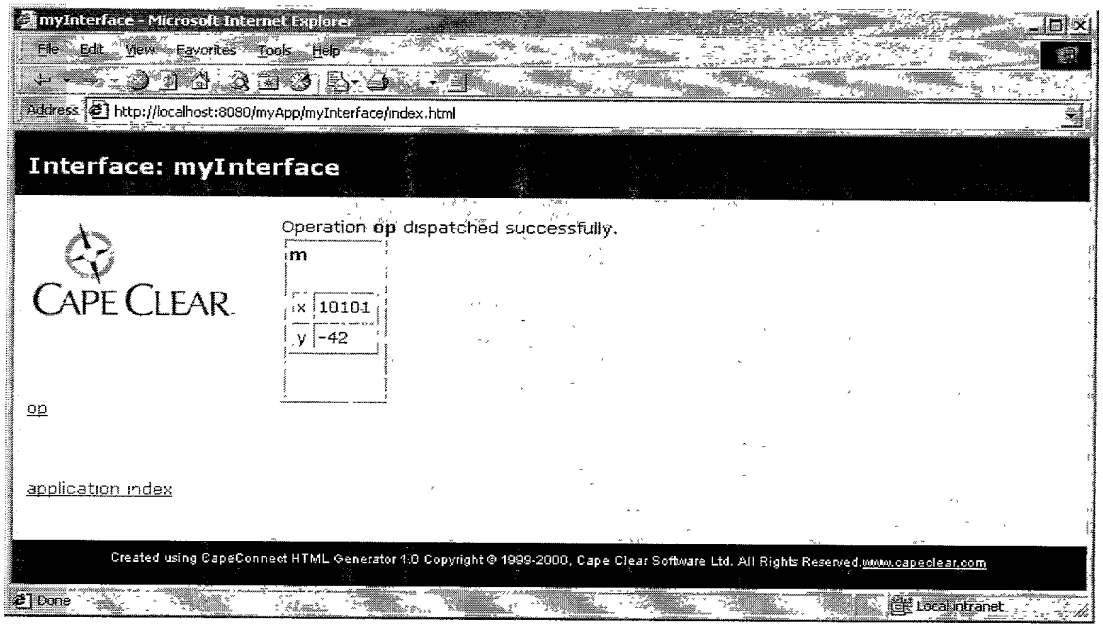

Figure 14

```
<MetaData>
   <Interface name="Foo">
      <Operation name="op1" replyexpected="true">
         <requestopen-phase-generated>
            <![CDATA[
               <HTML>
               <HEAD>
               <META NAME="GENERATOR" CONTENT="CapeConnect HTML Generator 1.0">
               <LINK REL=StyleSheet HREF="/capeconnect/capeconnect.css"
               TYPE="text/css" MEDIA=screen>
               <TITLE>op1</TITLE>
               </HEAD>
               <BODY>
               …
               ]>
         </requestopen-phase-generated>
            <Argument name="return_value" direction="return">
               <TypeSpec>
                  <BaseType name="long"/>
               </TypeSpec>
            <Argument name="arg1" direction="in">
               <TypeSpec>
                  <BaseType name="string"/>
                     <request-phase-generated depth="2">
                        <![CDATA[
                          <TR><TD><P><B>arg1</B><BR>
                          <INPUT TYPE="TEXT" NAME="arg1" ></P></TD></TR>
                        ]]>
                     </request-phase-generated>
               </TypeSpec>
            </Argument>
         <request phase-generated>
            <![CDATA[
               </BODY>
               </HTML>
            ]]>
         </request-phase-generated>
         </Operation>
      </Interface>
   </NameSpace>
</MetaData>
```

Figure 15

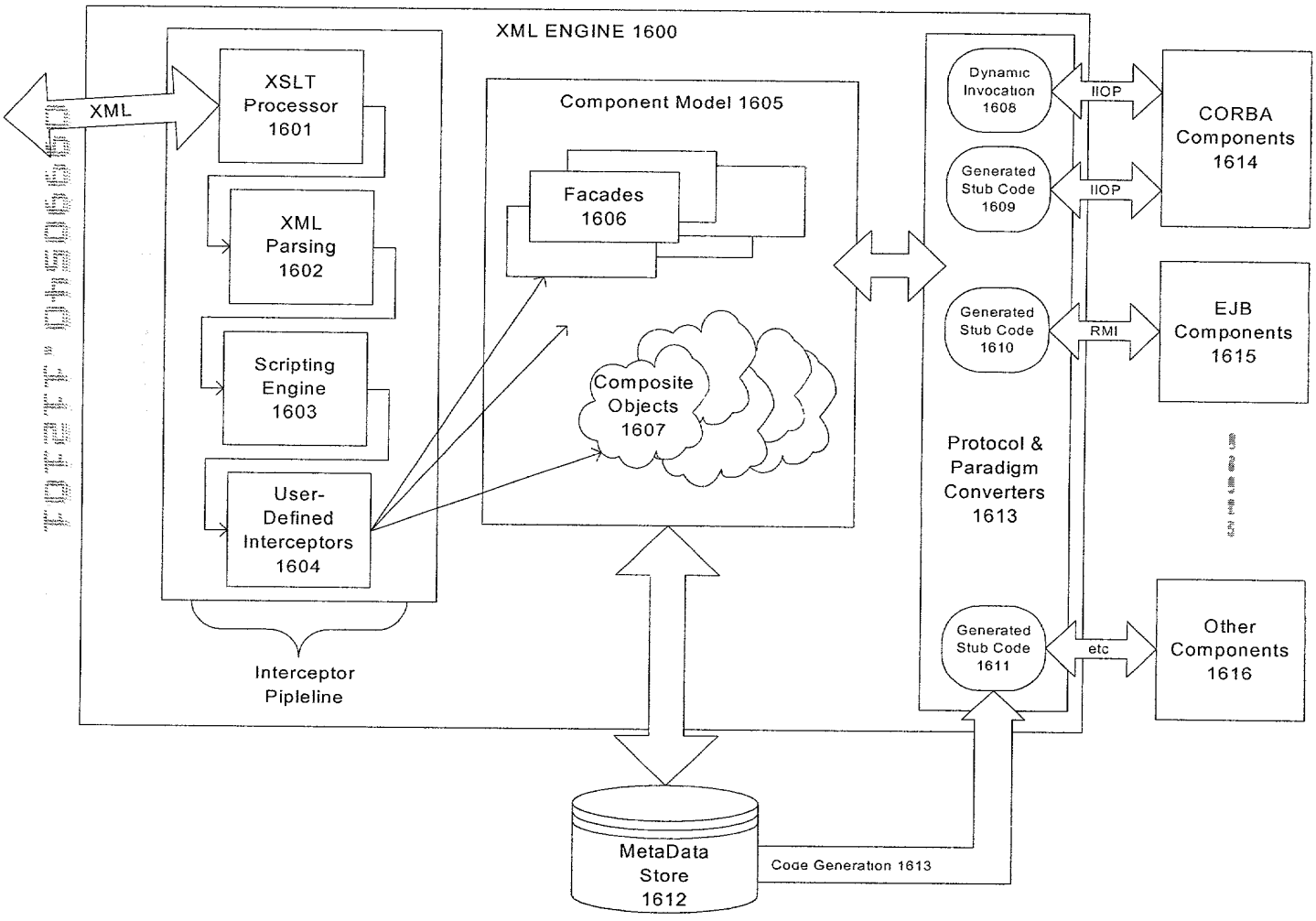
XML ENGINE 1600
XML
XSLT Processor 1601
XML Parsing 1602
Scripting Engine 1603
User-Defined Interceptors 1604
Interceptor Pipleline
Component Model 1605
Facades 1606
Composite Objects 1607
Dynamic Invocation 1608
Generated Stub Code 1609
Generated Stub Code 1610
Generated Stub Code 1611
Protocol & Paradigm Converters 1613
IIOP
IIOP
RMI
etc
CORBA Components 1614
EJB Components 1615
Other Components 1616
MetaData Store 1612
Code Generation 1613

Figure 16